# 2008

# REPORT

Government of Alberta

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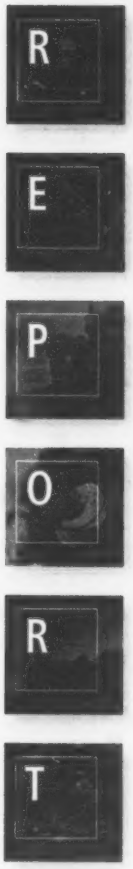


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# Messages

## Minister's Message

### Greetings from the Honourable Hector Goudreau, Minister of Municipal Affairs

Alberta's Fire Commissioner's office is committed to working with fire and emergency service responders to keep our communities safe. Part of this commitment is publishing the Fire Commissioner's annual statistical report. It is an important resource to focus fire prevention and safety efforts. Research shows us that today's fires are more toxic than ever before. Synthetic materials found in drapes, carpeting and furniture can make a home fire turn deadly in as little as three minutes. Early detection has never been more important.

My ministry remains committed to working with communities, industry and our other government partners to protect Albertans from the effects of emergency events, including fire. Strong partnerships are vital to the promotion of fire safety and fire prevention.

Let's continue to work together to make Alberta the safest place to live, work and raise a family. Thank you for your dedication and commitment to the safety of all Albertans.

Hector Goudreau
Minister of Municipal Affairs
MLA, Dunvegan-Central Peace

## Fire Commissioner's Message

A total of 5,690 fires in Alberta were reported to the Fire Commissioner at the Alberta Emergency Management Agency (AEMA) for the year 2008. These fires resulted in 33 deaths, 243 injuries and $390 million in direct property losses.

On average, during the 10-year period 1999 to 2008, there were 1.1 fire deaths per 100,000 population (range 0.7 to 1.8) in Alberta. Most fire deaths and injuries happen in places where Albertans feel the safest – their homes. Although only 31 per cent of all fires occurred in homes, 76 per cent of all fire deaths, 58 per cent of all fire injuries and 39 per cent of all property losses from fires occurred in homes. Home fire safety continues to be a priority for the Agency and the fire and emergency services in Alberta. "Arson or set fires," continued to top the list of Acts or Omissions at 24% and was the second most common cause of home fires. Efforts are underway to address this issue. In addition, our seniors continue to have the highest risk for fire death in Alberta, with their numbers growing every year. Seniors deserve our close attention.

I encourage all reporting agencies to continue their valuable contribution to the fire statistics information system at the Agency. We are striving to provide timely fire statistics, and your cooperation in reporting fires is greatly appreciated.

Yours in safety!

Trent West
Fire Commissioner

## Fire Deaths and Injuries 1999 to 2008
(Alberta and Canada)

| Year | Population* | Fire Deaths | Alberta Fire Death Rate† | Canada Fire Death Rate** | Fire Injuries | Alberta Fire Injury Rate‡ |
|---|---|---|---|---|---|---|
| 1999 | 2,871,271 | 51 | 1.8 | 1.3 | 385 | 13.4 |
| 2000 | 2,932,963 | 27 | 0.9 | 1.1 | 341 | 11.6 |
| 2001 | 2,962,664 | 43 | 1.5 | 1.1 | 393 | 13.3 |
| 2002 | 3,050,889 | 31 | 1.0 | 1 | 307 | 10.1 |
| 2003 | 3,091,831 | 24 | 0.8 | 0.9 | 323 | 10.4 |
| 2004 | 3,124,923 | 27 | 0.9 | 1 | 291 | 9.3 |
| 2005 | 3,242,110 | 38 | 1.2 | 0.9 | 247 | 7.6 |
| 2006 | 3,303,762 | 35 | 1.1 | — | 236 | 7.1 |
| 2007 | 3,416,498 | 23 | 0.7 | — | 212 | 6.2 |
| 2008 | 3,496,308 | 33 | 0.9 | — | 243 | 7.0 |
| Total | | 332 | | | 2,978 | |

* Source: Alberta Municipal Affairs: www.municipalaffairs.alberta.ca/images/2008pop(2).pdf
** Source: Council of Canadian Fire Marshals and Fire Commissioners.

† Fire Death Rate: Number of fire deaths per 100,000 population.
‡ Fire Injury Rate: Number of fire injuries per 100,000 population.

### F I R E

Based on probable causes of death, smoke inhalation accounted for 76% and burns for 24% of all fire deaths in 2008. The probable causes of fire injuries were: Smoke inhalation (41%); burns (40%); physical injury (11%); and other injury (7%).

The annual fire death rates in Alberta (for 1999 to 2008) have fluctuated around an average of 1.1 death per 100,000 population, with a range of 0.7 to 1.8. The annual fire injury rates in Alberta have fluctuated around an average of 9.6 injuries per 100,000 population, with a range of 6.2 to 13.4.

| Location of FIRE Deaths 2008 | |
|---|---|
| Airdrie | 2 |
| Calgary | 3 |
| Edmonton | 5 |
| Fort Macleod | 2 |
| Fort McMurray | 2 |
| Lacombe County | 1 |
| Medicine Hat | 1 |
| Red Deer County | 1 |
| Redcliff | 1 |
| Rocky View No. 44, M.D. of | 1 |
| Rosemary | 2 |
| Spirit River | 1 |
| Westlock County | 1 |
| Wetaskiwin | 1 |
| Clearwater County | 1 |
| Enoch Cree Nation | 1 |
| Frog Lake First Nation | 1 |
| Bigstone Cree Nation | 1 |
| Yellowhead County | 1 |
| Buck Creek | 1 |
| DeBolt | 1 |
| Hobbema | 1 |
| Siksika #146 | 1 |

# Causes of Fire Deaths

## One and Two Family Dwellings, Apartments, Mobile Homes, Rooming/Boarding/Lodging Houses, and Travel Trailers

| | |
|---|---|
| Electrical wiring/distribution equipment short circuit/malfunction ignited combustibles | 6 |
| Arsonist ignited bedding (1), gasoline (2), other (1) | 4 |
| Cigarette ignited bedding(1), upholstered furniture (1), garbage/trash (1), other (3) | 6 |
| Flue pipe/vent connector ignited building components | 1 |
| Portable space heater short circuit ignited building components | 1 |
| Portable cooking equipment ignited drapery/blind | 2 |
| Refrigerator malfunction ignited unknown materials | 1 |
| Unknown | 7 |

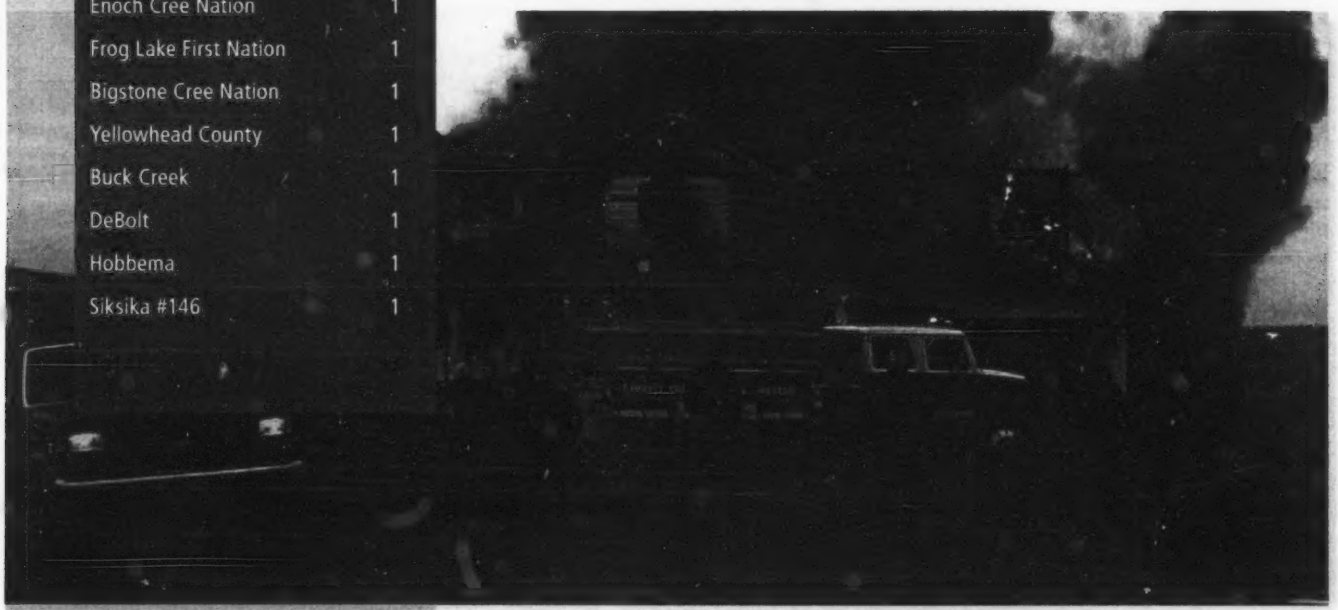
## Automobiles (includes cars, trucks, vans, single body units)

| | |
|---|---|
| General truck, kept running while stuck in a snow bank – victim asleep | 1 |
| Industrial truck accident ignited diesel | 2 |
| Unclassified ground transport vehicle accident ignited unknown material | 1 |

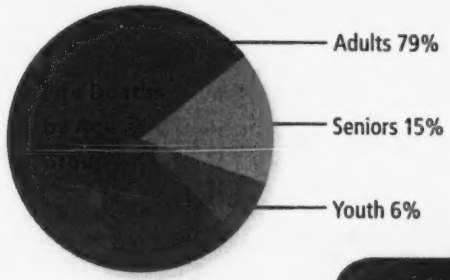
## Implement Shed/Workshop

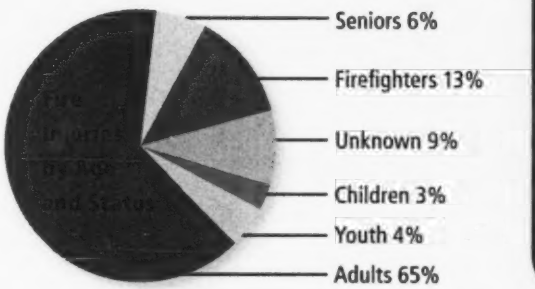
| | |
|---|---|
| Unknown | 1 |

| **Total Fire Deaths** | **33** |
|---|---|



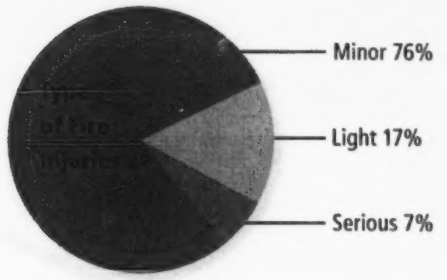
## Fire Deaths and Injuries by Age and Status




**Seniors:** 65 years of age and older
**Adults:** 18 - 64 years
**Youth:** 12 - 17 years
**Children:** 11 years and under
**Note:** No firefighters died in 2008 fires

*Definitions of injuries are provided in the glossary, page 18.*




## Risk of Fire Deaths and Injuries

The risk of dying or being injured in a fire can be calculated as the fire death rate or fire injury rate – the number of casualties in an age group divided by the population of the age group. When fire deaths or injuries were calculated for the five-year period, 2004-08, as rates per 100,000 population, per annum, using the above formula, it was found that:

- Seniors 65 years and older had the highest risk of dying in fires (fire death rate of 1.3), followed by adults 35 - 49 years (1.1), adults 50 - 64 years (1.0), adults 18 - 34 years (1.0), children 5 years and under (0.3), children 6 - 11 (0.3), and youth 12 - 17 (0.3).
- Civilian adults 18 - 34 had the highest risk of being injured in fires (fire injury rate of 6.8) followed by adults 35 - 49 (6.6), adults 50 - 64 (5.5), youth 12 - 17 (5.1), seniors 65 years and older (4.3), children 6 - 11 (2.6) and children 5 years and under (2.3).

Population data source: *Interactive Health Data Application,* Alberta Health and Wellness: www.ahw.gov.ab.ca/IHDA_Retrieval

## FIRE

On average, a fire related death occurred every 11 days in Alberta in 2008.

Of the 33 fatalities, 21% were impaired (alcohol/drugs/medication), 15% were asleep, and 6% were mentally handicapped at the time of fire. Where known, actions of fatalities were: Injured while attempting escape (9%); entered/remained for firefighting (6%); entered/remained to save personal property or for rescue purposes (3% each).

Of the 243 injuries, 67% were awake and normal, 12% were asleep and 4% were impaired (alcohol/drugs/medication). Actions of the injured were: Entered/remained for firefighting (37%); injured while attempting escape (21%); entered/remained to save personal property (6%); and entered/remained for rescue purposes (5%).

There were 0.7 fire injuries reported per day, on average, in Alberta in 2008.

The civilian adult male to female ratio was 2:1 for fire deaths and 3:1 for fire injuries.

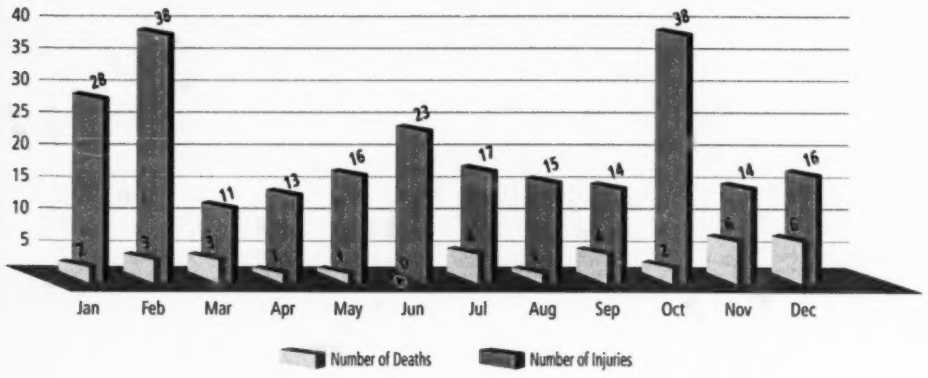
## FIRE

The highest number of fire deaths per month occurred in November and December (6 each), while the highest number of fire injuries were in February and October (38 each). A five-year (2004-08) analysis revealed most fatalities occurred in January and November (12% each) and most injuries happened in January (13%) and February (10%).

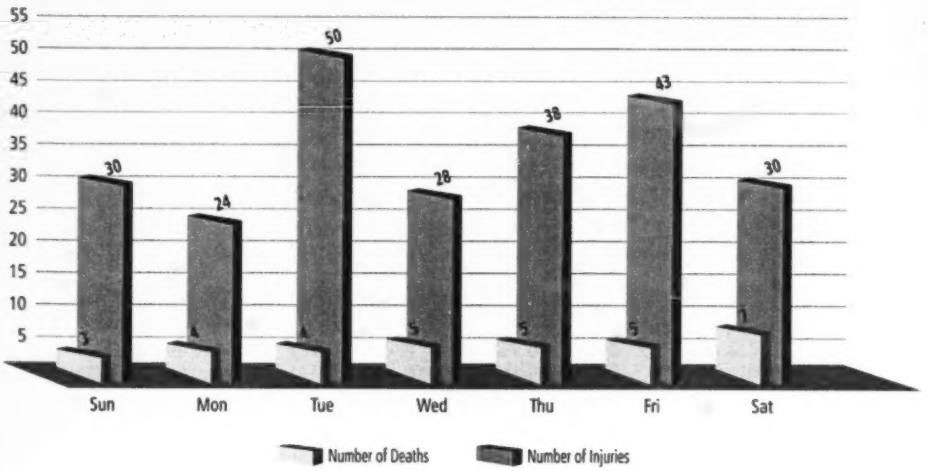
The highest number of fire deaths per day of week occurred on Saturdays (7) followed by Fridays, Thursdays and Wednesdays (5 each), while the highest number of fire injuries was on Tuesdays (50) and Fridays (43). A five-year analysis revealed most fatalities occurred on Thursdays and Fridays (18% each), and most injuries on Tuesdays and Fridays (16% each).

Seventy-nine percent of all fire deaths occurred during sleeping hours between 10:30 p.m. and 6:29 a.m. The majority of fire injuries (40%) occurred between 6:30 a.m. and 2:29 p.m. A five-year analysis revealed most fatalities (46%) occurred between 10:30 p.m. and 6:29 a.m., while most injuries (40%) happened between 2:30 and 10:29 p.m.

## Fire Deaths and Injuries by Month




## Fire Deaths and Injuries by Day of Week




## Fire Deaths and Injuries by Time of Day

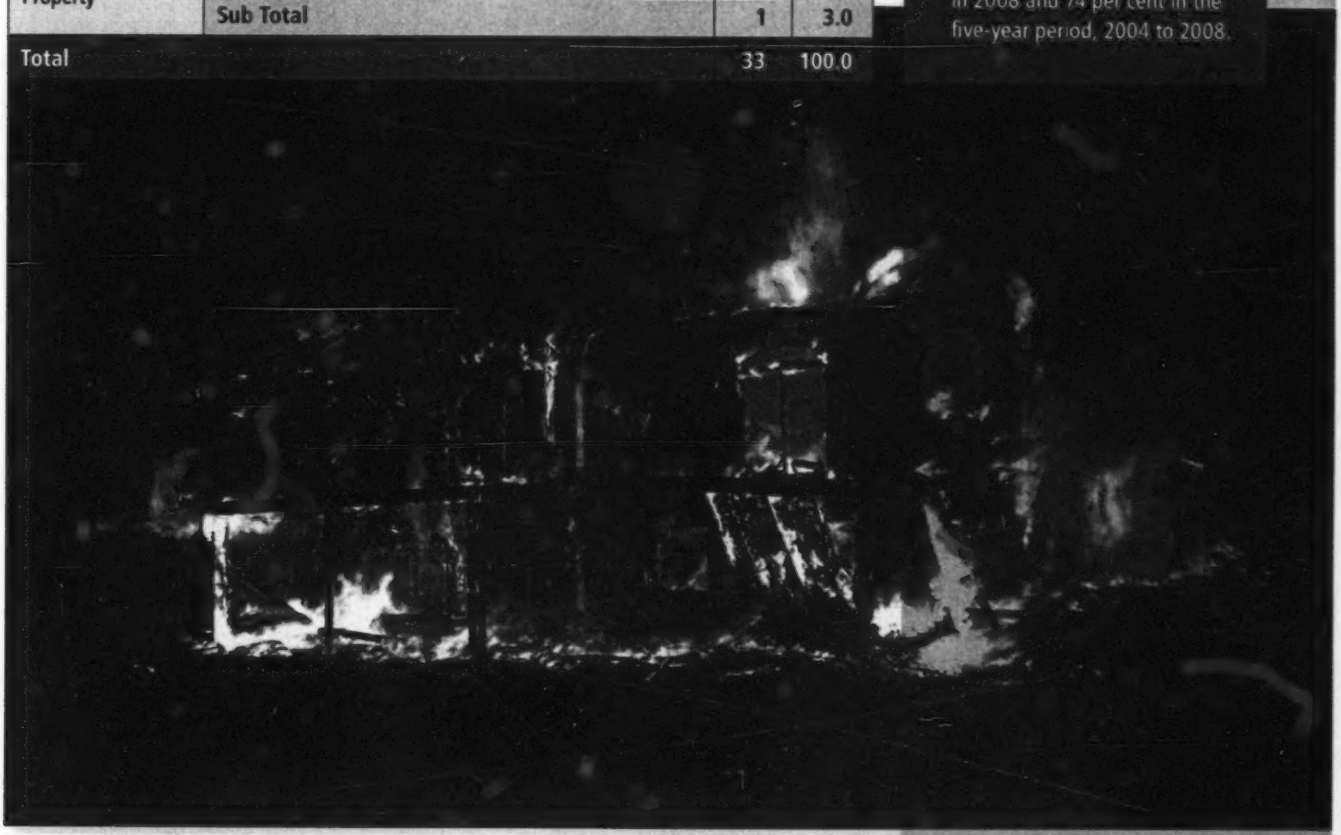
| | Type | | | |
|---|---|---|---|---|
| Time Periods | Injuries | | Fire Deaths | |
| | No. | % | No. | % |
| 6:30 a.m. to 2:29 p.m. | 98 | 40.3 | 4 | 12.1 |
| 2:30 p.m. to 10:29 p.m. | 84 | 34.6 | 2 | 6.1 |
| 10:30 p.m. to 6:29 a.m. | 58 | 23.9 | 26 | 78.8 |
| Unknown | 3 | 1.2 | 1 | 3.0 |
| Total | 243 | 100 | 33 | 100 |

# Fire Deaths by Major Property Classification

| Property Classification | | Fire Deaths No. | % |
|---|---|---|---|
| Residential | One and Two Family Dwellings | 17 | 51.5 |
| | Mobile Home (one or two family units) | 5 | 15.2 |
| | Apartments | 3 | 9.1 |
| | Rooming, Boarding, Lodging House – Unclassified | 2 | 6.1 |
| | Travel Trailer | 1 | 3.0 |
| | **Sub Total** | **28** | **84.8** |
| Special Property – Transportation Equipment | Tractor Trailer | 1 | 3.0 |
| | Flammable Liquid, Chemical Tank Truck | 1 | 3.0 |
| | Trucks (including light trucks/van/single body units) | 1 | 3.0 |
| | Ground Transport Vehicle – Unclassified | 1 | 3.0 |
| | **Sub Total** | **4** | **12.1** |
| Miscellaneous Property | Shed (includes implement shed and workshop) | 1 | 3.0 |
| | **Sub Total** | **1** | **3.0** |
| Total | | 33 | 100.0 |

**FIRE**

Residential properties accounted for 85 per cent of fire deaths in 2008 and 74 per cent in the five-year period, 2004 to 2008.



## Fire Injuries by Major Property Classification

| Property Classification | No. | % |
|---|---|---|
| Residential | | |
| One and Two Family Dwellings | 97 | 39.9 |
| Apartments | 35 | 14.4 |
| Mobile Home (1 or 2 family units) | 8 | 3.3 |
| Hotel, Inn, Lodge (year round use) | 5 | 2.1 |
| Other Residential | 9 | 3.7 |
| **Sub Total** | **154** | **63.4** |
| Special Property and Transportation Equipment | | |
| Buildings Under Construction | 9 | 3.7 |
| Trucks, Cars | 10 | 4.1 |
| Other Vehicles | 8 | 3.3 |
| Other Properties | 4 | 1.6 |
| **Sub Total** | **31** | **12.8** |
| Industrial Manufacturing Properties | | |
| Industrial Manufacturing | 20 | 8.2 |
| Other | 4 | 1.6 |
| **Sub Total** | **24** | **9.9** |
| Miscellaneous Property | 13 | 5.3 |
| Storage Property | 13 | 5.3 |
| Mercantile | 4 | 1.6 |
| Institutional and Assembly | 4 | 1.6 |
| **Total** | **243** | **100.0** |

## FIRE

Most fire injuries occurred in residential properties (63%), particularly in one and two family dwellings (40%) and apartments (14%). In the five-year period, 2004-08, residential properties accounted for 63 per cent of fire injuries, mostly in one and two family dwellings (36%) and apartments (18%).

The majority of fire injuries were inflicted in fires related to stove-top cooking (14%), followed by arson/vandalism (12%) and smoking (10%).

## Major Causes of Fire Injuries

| Causes | No. | % |
|---|---|---|
| Stove top fire in pan/deep fryer (with mainly cooking oil/fat) | 35 | 14.4 |
| Arson/vandalism | 29 | 12.0 |
| Cigarette/smoker's material igniting bedding or a variety of other combustibles | 24 | 10.0 |
| Electrical wiring, switches, panels, extension cords, power bars igniting a variety of combustibles | 23 | 9.5 |
| Other cooking appliances – ovens, barbecues, separate deep fat fryers, etc. | 16 | 6.6 |
| Space heaters, vent/flu pipes | 15 | 6.2 |
| Central furnaces and water heaters | 13 | 5.3 |
| Child fire-play with matches, lighters, smoker's materials, etc. | 10 | 4.1 |
| Candles igniting a variety of combustibles | 9 | 3.7 |
| Internal combustion engine, mostly igniting flammable liquids | 7 | 2.9 |
| Cutting, welding, other torches | 6 | 2.5 |
| Other | 21 | 8.6 |
| Unknown | 35 | 14.4 |
| **Total** | **243** | **100.0** |

## Fire Losses in Alberta 1999 to 2008

| Year | Fires | Deaths | Injuries | $ Losses | Adjusted $ Losses* |
|---|---|---|---|---|---|
| 1999 | 6,379 | 51 | 385 | 146,414,201 | 160,190,591 |
| 2000 | 6,457 | 27 | 341 | 158,724,441 | 167,962,371 |
| 2001 | 7,021 | 43 | 393 | 229,231,932 | 237,054,738 |
| 2002 | 5,994 | 31 | 307 | 272,588,413 | 272,588,413 |
| 2003 | 5,647 | 24 | 323 | 348,481,771 | 333,794,799 |
| 2004 | 5,140 | 27 | 291 | 202,740,018 | 191,444,776 |
| 2005 | 5,197 | 38 | 247 | 450,426,713 | 416,675,960 |
| 2006 | 5,135 | 35 | 236 | 213,851,638 | 190,428,885 |
| 2007 | 5,298 | 23 | 212 | 329,218,639 | 279,235,487 |
| 2008 | 5,690 | 33 | 243 | 389,941,829 | 320,675,846 |
| Total | 57,958 | 332 | 2,978 | 2,741,619,595 | 2,570,051,866 |

*Adjusted losses were calculated from actual losses using the Annual Consumer Price Index (C.P.I.) figures for Alberta obtained from Statistics Canada (2002 CPI = 100), http://www40.statcan.ca/l01/cst01/econ09j-eng.htm

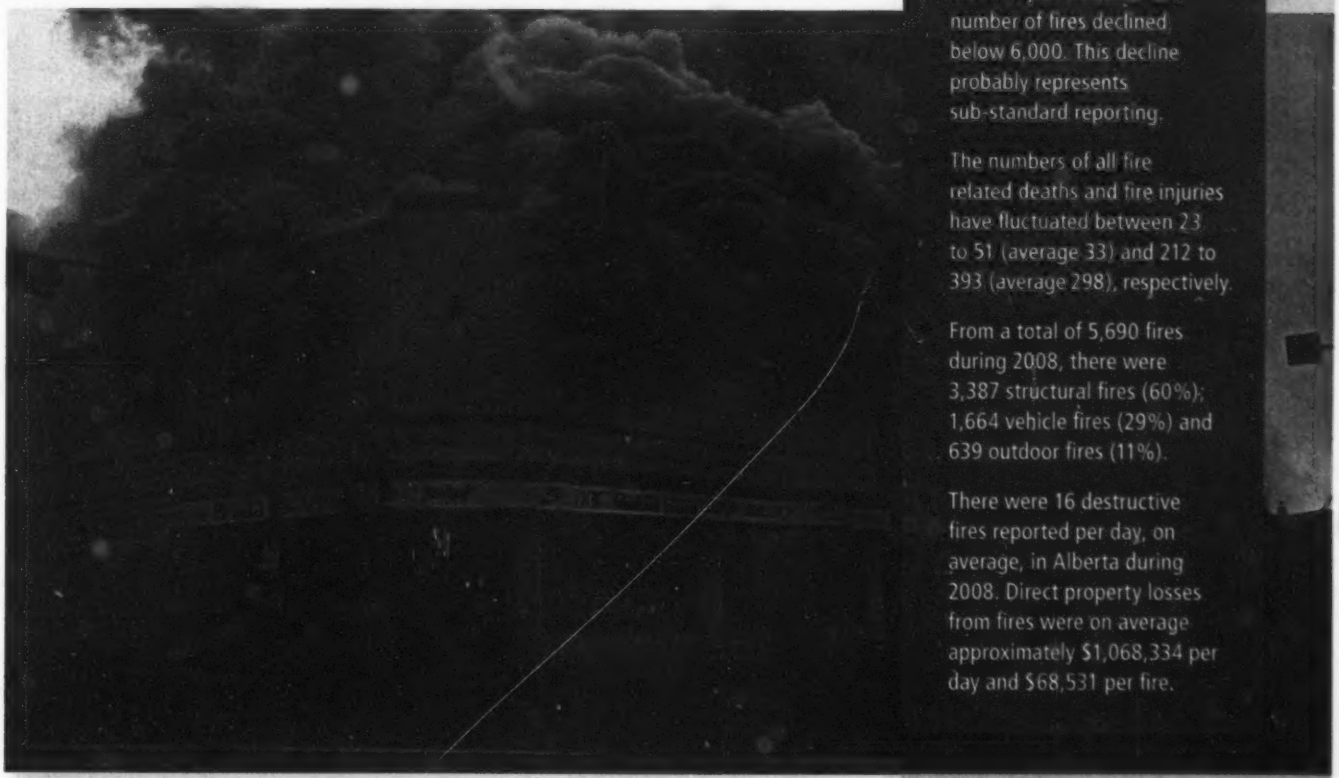
## FIRE

During the 10-year period 1999 to 2008, the annual number of fires reported to the Fire Commissioner averaged 5,796. 2002 marks the first year in which the number of fires declined below 6,000. This decline probably represents sub-standard reporting.

The numbers of all fire related deaths and fire injuries have fluctuated between 23 to 51 (average 33) and 212 to 393 (average 298), respectively.

From a total of 5,690 fires during 2008, there were 3,387 structural fires (60%); 1,664 vehicle fires (29%) and 639 outdoor fires (11%).

There were 16 destructive fires reported per day, on average, in Alberta during 2008. Direct property losses from fires were on average approximately $1,068,334 per day and $68,531 per fire.



## F I R E

The province has experienced an average fire rate of 1.8 during the period 1999 to 2008.

As a percentage of gross domestic product, fire losses have remained the same between 2007 and 2008. As a percentage of personal income, fire losses have increased by 10% over the same period.

On average, 476 fires (range = 401 to 607) were reported to the Fire Commissioner each month during 2008. This average was exceeded in May (+28%) followed by October (+5%). On average, direct property losses averaged $32.5 million per month (range = $32M to $47 million). This average was exceeded in September (+45%).

On average there were 813 fires per day of week (range = 754 to 886). Property losses averaged $49 million per day of week (range = $37M to $82 million).

Where the time of fire was known, the number of fires was highest between 4 and 8 p.m. (20%) and 12 noon and 4 p.m. (19%). Dollar losses were highest between 8 a.m. to 12 noon (21%).

# Fire Rates and Per Capita Losses 1999 to 2008

| Year | Population | Fires | Fire Rate* | Loss Estimate | $ Loss/Capita |
|---|---|---|---|---|---|
| 1999 | 2,871,271 | 6,379 | 2.2 | 146,414,201 | 51.0 |
| 2000 | 2,932,963 | 6,457 | 2.2 | 158,724,441 | 54.1 |
| 2001 | 2,962,664 | 7,021 | 2.4 | 229,231,932 | 77.4 |
| 2002 | 3,050,889 | 5,994 | 2.0 | 272,588,413 | 89.3 |
| 2003 | 3,091,831 | 5,647 | 1.8 | 348,481,771 | 112.7 |
| 2004 | 3,124,923 | 5,140 | 1.6 | 202,740,018 | 64.9 |
| 2005 | 3,242,110 | 5,197 | 1.6 | 450,426,713 | 138.9 |
| 2006 | 3,303,762 | 5,135 | 1.6 | 213,851,638 | 64.7 |
| 2007 | 3,416,498 | 5,298 | 1.6 | 329,218,639 | 96.4 |
| 2008 | 3,496,308 | 5,690 | 1.6 | 389,941,829 | 111.5 |

*Fire Rate = Number of fires per 1,000 population.

# Fire Losses Related to Economic Indices 1999 to 2008

| Year | Fire Losses ($) | Gross Domestic Product ($ million)* | % of GDP | Personal Income ($ million)* | % of Personal Income |
|---|---|---|---|---|---|
| 1999 | 146,414,201 | 117,080 | 0.13 | 81,151 | 0.18 |
| 2000 | 158,724,441 | 144,789 | 0.11 | 89,094 | 0.18 |
| 2001 | 229,231,932 | 151,274 | 0.15 | 98,131 | 0.23 |
| 2002 | 272,588,413 | 150,594 | 0.18 | 101,072 | 0.27 |
| 2003 | 348,481,771 | 170,113 | 0.20 | 105,664 | 0.33 |
| 2004 | 202,740,018 | 189,743 | 0.11 | 115,269 | 0.18 |
| 2005 | 450,426,713 | 219,810 | 0.20 | 128,285 | 0.35 |
| 2006 | 213,851,638 | 238,886 | 0.09 | 146,058 | 0.15 |
| 2007 | 329,218,639 | 255,787 | 0.13 | 160,149 | 0.21 |
| 2008 | 389,941,829 | 291,577 | 0.13 | 172,209 | 0.23 |

*Sources: Statistics Canada, *Provincial and Territorial Economic Accounts: Data Tables*, catalogue number 13-018-X.

## Fire Losses by Major Property Classification

| Major Property Classification | Fires | % | $ Losses | % of $ Losses |
|---|---|---|---|---|
| Special Property – Transportation Equipment | 2,340 | 41 | 44,656,405 | 12 |
| Residential | 2,008 | 35 | 163,834,931 | 42 |
| Storage Properties | 447 | 8 | 17,113,541 | 4 |
| Mercantile | 161 | 3 | 19,044,114 | 5 |
| Assembly | 142 | 2 | 33,958,122 | 9 |
| Industrial Manufacturing Properties | 129 | 2 | 71,330,708 | 18 |
| Business and Personal Service | 66 | 1 | 6,314,388 | 2 |
| Institutional | 21 | 0 | 645,860 | 0 |
| Miscellaneous Property | 376 | 7 | 33,043,760 | 9 |
| Total | 5,690 | 100 | 389,941,829 | 100 |

## Fire Losses by Major Sources of Ignition

| Major Sources of Ignition | Fires | % | $ Losses | % of $ Losses |
|---|---|---|---|---|
| Smoker's Material and 'Open' Flames | 1,279 | 22 | 51,850,480 | 13 |
| Exposure | 612 | 11 | 34,374,533 | 9 |
| Electrical Distribution Equipment | 578 | 10 | 64,612,274 | 17 |
| Cooking Equipment | 425 | 7 | 15,534,411 | 4 |
| Heating Equipment | 283 | 5 | 24,883,820 | 6 |
| Appliances and Equipment | 176 | 3 | 7,115,152 | 2 |
| No Igniting Object | 34 | 1 | 5,468,929 | 1 |
| Other Electrical Equipment | 182 | 3 | 10,134,312 | 3 |
| Miscellaneous | 564 | 10 | 75,841,865 | 19 |
| Not Determined | 1,557 | 27 | 100,126,053 | 26 |
| Total | 5,690 | 100 | 389,941,829 | 100 |

## FIRE

The largest number of fires occurred in one/two family dwellings and ground transport vehicles (23% each), followed by outdoor properties (9%) and apartments (7%).

Property classes with the highest dollar losses were one and two family dwellings ($126 million or 32%), ground transport vehicles ($34 million or 9%), apartments ($21 million or 5%).

The most frequent known areas of fire origin were in vehicle-engine (20%), outside (18%), kitchen-cooking (8%).

The most common sources of ignition in Alberta fires in 2008 were: Exposure fires from detached structures, vehicles, outdoor properties, etc. (9%); electrical distribution equipment, wiring, lamps (9%); cooking equipment, primarily stoves and other cooking appliances (6%); smoker's materials such as cigarettes (6%); internal combustion engine (4%). The highest property loss was attributed to fires where sources of ignition were unknown ($100 million or 26%).

Where known, the most common fuel or energy associated with the source of ignition were:

- Electricity (21%)
- Exposure Fire (11%)
- Match/Lighter – Not Related to Smoking (11%)
- Smokers Material – Cigarette/cigar/ pipe/match/lighter (6%)
- Gasoline (4%)
- Coal/Wood/Coke/Paper, etc. (3%).

## F I R E

Arson and vandalism accounted for 24% of all fires in Alberta in 2008. This means that approximately one out of four fires was deliberately set.

The other common acts or omissions were mechanical, electrical failure, malfunction (16%); electrical short circuit (7%), ignorance of hazard (6%); misuse of smoker's material (4%); overheated cooking oil, grease, wax (2%); distracted/preoccupied (2%) and combustible placed too close to heat (2%). Acts or omissions could not be determined in 15% of fires ($80 million) while arson or other set fires could not be determined in another 8% of fires ($16 million).

Where known, materials most commonly ignited first were building components (14%); garbage/trash/rubbish (5%); gasoline (5%); Electric insulation in electric equipment (4%); and cooking oil/fat (3%). Materials first ignited were not determined in 30% of the fires and these fires accounted for $111 million in property losses.

## Fire Losses by Major Acts or Omissions

| Major Acts or Omissions | Fires | % | $ Losses | % of $ Losses |
|---|---|---|---|---|
| Arson or 'Set' fires | 1,346 | 24 | 48,409,480 | 12 |
| Mechanical/Electrical Failure, Malfunction | 1,373 | 24 | 126,260,335 | 32 |
| Human Failing | 734 | 13 | 41,826,763 | 11 |
| Misuse of Source of Ignition | 482 | 8 | 24,446,304 | 6 |
| Misuse of Material Ignited | 289 | 5 | 11,783,762 | 3 |
| Construction, Design, Installation Deficiency | 112 | 2 | 9,684,131 | 3 |
| Misuse of Equipment | 78 | 1 | 4,669,252 | 1 |
| Vehicle Accident | 67 | 1 | 1,622,694 | 0 |
| Miscellaneous | 95 | 2 | 25,686,659 | 7 |
| Not Determined | 856 | 15 | 79,832,686 | 21 |
| Act or Omission Not Applicable | 258 | 5 | 15,719,763 | 4 |
| Total | 5,690 | 100 | 389,941,829 | 100 |

## Fire Losses by Major Materials First Ignited

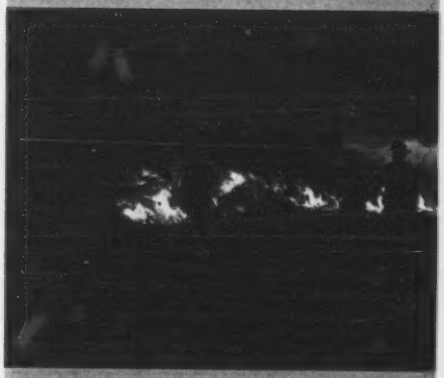
| Major Materials First Ignited | Fires | % | $ Losses | % of $ Losses |
|---|---|---|---|---|
| Building Components | 735 | 13 | 84,149,428 | 22 |
| Flammable and Combustible Liquids | 726 | 13 | 48,720,199 | 13 |
| Wood, Paper Products | 529 | 9 | 19,792,539 | 5 |
| Agricultural Products | 331 | 6 | 14,598,586 | 4 |
| Chemicals | 275 | 5 | 23,238,812 | 6 |
| Furniture, Furnishings | 234 | 4 | 14,649,934 | 4 |
| Clothing, Textiles | 186 | 3 | 7,451,812 | 2 |
| Flammable Gases | 85 | 1 | 4,294,353 | 1 |
| Miscellaneous | 898 | 16 | 62,499,829 | 16 |
| Not Determined | 1,691 | 30 | 110,546,337 | 28 |
| Total | 5,690 | 100 | 389,941,829 | 100 |

## Initial Detection of Fires

| Method of Initial Detection | Fires | % |
|---|---|---|
| Visual Sighting – Personal Detection | 5,027 | 88 |
| Initial Detection – Unknown | 250 | 4 |
| Smoke Alarm – Single Station | 155 | 3 |
| Smoke Detector – Linked to Alarm System | 105 | 2 |
| Initial Detection – Unclassified | 59 | 1 |
| No Initial Detection – Burnt Out | 56 | 1 |
| Automatic Sprinkler System | 22 | 0 |
| Heat Detector – Linked to Alarm System | 12 | 0 |
| Automatic System Other Than Sprinkler | 4 | 0 |
| Total | 5,690 | 100 |

## Fires by Method of Fire Control and Extinguishment

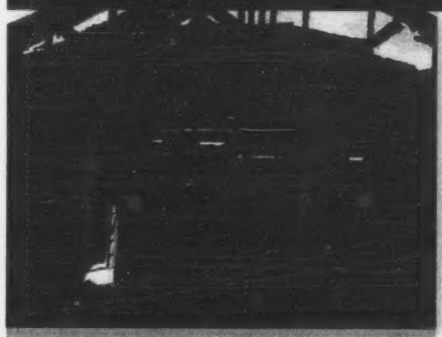
| Method of Fire Control and Extinguishment | Fires | % |
|---|---|---|
| Fire Department – Water | 3,340 | 59 |
| Hand Fire Extinguisher | 527 | 9 |
| Miscellaneous – Unknown | 522 | 9 |
| Makeshift Fire Fighting Aid | 390 | 7 |
| Burned Out | 386 | 7 |
| Fire Department – Other Than Water | 293 | 5 |
| Standpipe System | 102 | 2 |
| Miscellaneous – Unclassified | 94 | 2 |
| Sprinkler System | 31 | 1 |
| Fixed System Other Than Sprinklers | 5 | 0 |
| Total | 5,690 | 100 |

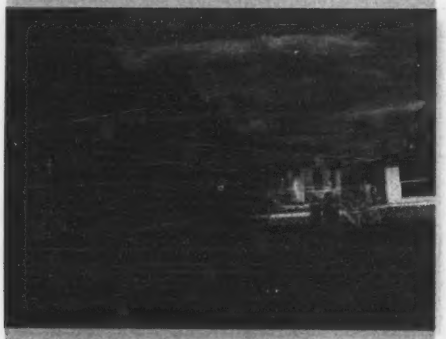


### F I R E

Visual sighting or other means of personal detection (88%) was the primary means of initial detection of fires in 2008, while smoke alarms/detector devices accounted for 5%.

Where the method of fire control and extinguishment is known, fire departments extinguished 59% of all reported fires. The other common methods of fire extinguishment were hand fire extinguishers (9%) and "makeshift" fire fighting aids (7%).





## Home Fires by Type of Home

| Type of Home | Fires | % of Fires | Deaths | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| One and Two Family Dwellings | 1,326 | 73 | 17 | 68 | 97 | 69 | 125,661,722 | 82 |
| Apartments, Tenements, Flats | 388 | 21 | 3 | 12 | 35 | 25 | 20,829,455 | 14 |
| Mobile Homes | 102 | 6 | 5 | 20 | 8 | 6 | 7,193,480 | 5 |
| Total | 1,816 | 100 | 25 | 100 | 140 | 100 | 153,684,657 | 100 |

## Home Fires by Major Areas of Fire Origin

| Area of Origin | Fires | % of Fires | Deaths | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| Kitchen/Cooking Area | 386 | 21 | 5 | 20 | 46 | 33 | 16,124,615 | 10 |
| Sleeping (Under Five Occupants) | 163 | 9 | 6 | 24 | 21 | 15 | 16,438,455 | 11 |
| Exterior Wall | 141 | 8 | 1 | 4 | 3 | 2 | 15,978,802 | 10 |
| Lounge/Living Room | 127 | 7 | 4 | 16 | 14 | 10 | 14,790,905 | 10 |
| Court/Patio/Terrace | 111 | 6 | 0 | 0 | 2 | 1 | 6,949,476 | 5 |
| Vehicle (garage) | 60 | 3 | 1 | 4 | 7 | 5 | 9,172,700 | 6 |
| Ceiling and Floor Assembly (2%) and Wall Assembly (2%) | 60 | 3 | 1 | 4 | 3 | 2 | 7,763,202 | 5 |
| Laundry Area | 55 | 3 | 0 | 0 | 2 | 1 | 3,544,345 | 2 |
| Outside Area – Unclassified | 49 | 3 | 0 | 0 | 0 | 0 | 2,077,941 | 1 |
| Heating Equipment Room | 48 | 3 | 0 | 0 | 5 | 4 | 5,147,450 | 3 |
| Exterior Balcony/Porch | 45 | 2 | 2 | 8 | 2 | 1 | 8,010,431 | 5 |
| Crawl Space | 42 | 2 | 0 | 0 | 2 | 1 | 3,099,902 | 2 |
| Ceiling and Roof/ Ceiling Space/Attic | 34 | 2 | 0 | 0 | 1 | 1 | 2,505,754 | 2 |
| Chimney/Flue Pipe/Gas Vent | 30 | 2 | 0 | 0 | 2 | 1 | 2,681,642 | 2 |
| All Other Areas | 366 | 20 | 3 | 12 | 29 | 22 | 25,681,903 | 17 |
| Area of Origin – Unknown | 99 | 5 | 2 | 8 | 1 | 1 | 13,717,134 | 9 |
| Total | 1,816 | 100 | 25 | 100 | 140 | 100 | 153,684,657 | 100 |

## F I R E

Thirty- one percent of all fires in Alberta occurred in homes. Home fires accounted for 76% of all fire deaths (25 out of 33), 58% of all fire injuries (140 out of 243) and 39% of all property losses ($154 million out of $390 million) from fires.

Most Alberta home fires started in kitchens (21%), bedrooms (9%), exterior walls (8%), and living rooms (7%).

## Major Known Causes of Home Fires

| Fire Causes | Fires | % of Fires | Deaths | Injuries | $ Losses |
|---|---|---|---|---|---|
| Cooking | 345 | 19 | 2 | 44 | 12,597,671 |
| Arson/Set Fire | 268 | 15 | 4 | 23 | 20,764,521 |
| Electrical Distribution Equipment and Light/Fluorescent Bulb | 226 | 12 | 4 | 11 | 25,288,725 |
| Smoking | 197 | 11 | 6 | 15 | 13,127,628 |
| Heating Equipment Related* | 163 | 9 | 2 | 11 | 15,877,084 |
| Exposure Fire** | 115 | 6 | 0 | 0 | 9,712,575 |
| Candle (Accident) | 51 | 3 | 0 | 9 | 3,587,037 |
| Appliance/Equipment Related | 43 | 2 | 0 | 6 | 4,083,504 |
| Child Fire-play | 27 | 1 | 0 | 2 | 1,735,941 |
| Clothes Dryer | 24 | 1 | 0 | 0 | 94,771 |
| Flammable/Combustion Liquid Ignition | 16 | 1 | 0 | 3 | 1,195,790 |
| Other Causes/Unknown | 341 | 19 | 7 | 16 | 45,619,410 |
| Total | 1,816 | 100 | 25 | 140 | 153,684,657 |

* Heating equipment includes furnaces, water heaters, fireplaces, wood stoves, space heaters and associated chimneys/vents.

** An exposure fire is a fire that spreads from one property to an adjacent property.

### F I R E

Most home fires (19%) and most home fire injuries (31%) were related to cooking.

About 22% of all cooking related fires involved the ignition of cooking oil. These fires accounted for 27% of all cooking related fire injuries.

The highest percentage of deaths occurred where fires started in the bedrooms (24%) and living rooms (16%). Smoking related fires accounted for 50% of fire deaths in bedrooms.

Most kitchen fires started on stove/top burners (74%), and these caused 74% of injuries in kitchen fires.

Major sources of ignition in bedrooms were smoker's material – mostly cigarettes (20%), electrical wiring/distribution-equipment/ lamps/bulbs (18%), followed by candles (11%).

Major sources of ignition in living rooms were electrical wiring/distribution-equipment/ lamps/bulbs (24%), candles (16%), arson/vandalism (16%), cigarettes/ smoker's material (15%).

Where fires started on the exterior wall, exposure from detached structure fire (26%) and arson/set fires (22%) were the major sources of ignition.

In court, patio and terrace area fires the main source of ignition were cigarettes/smoker's materials (47%).

Forty two per cent of laundry area fires started in clothes dryers.

When fire originated in heating equipment rooms the main sources of ignition were furnaces (25%) and service water heaters (21%).

# Home Fires by Smoke Alarm Operation

## Smoke Alarm Installation

| Status | Fires | % of Fires | Deaths* | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| Not Installed | 876 | 48 | 11 | 44 | 36 | 26 | 74,508,883 | 48 |
| Installed | 940 | 52 | 14 | 56 | 104 | 74 | 79,175,774 | 52 |
| Total | 1,816 | 100 | 25 | 100 | 140 | 100 | 153,684,657 | 100 |

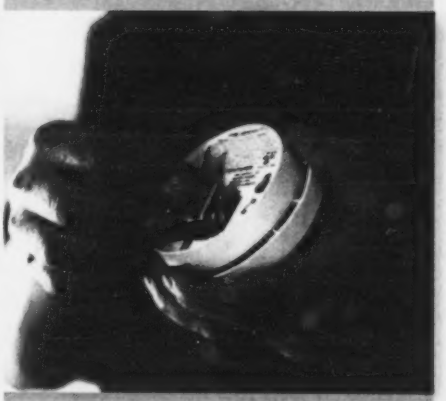
*Please refer to the research article titled *"Making sense of smoke alarm data and home fire deaths,"* in the August 2004 issue of *Alberta FIREnews* (pages 16 to 19), for a detailed statistical analysis of home fire deaths in relation to smoke alarms. Previous issues of *Alberta FIREnews* are posted at www.aema.alberta.ca/ps_alberta_fire_news.cfm

## Activation of Smoke Alarms

| Status | Fires | % of Fires | Deaths | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| Activated | 308 | 33 | 5 | 36 | 35 | 34 | 23,743,116 | 30 |
| Not Activated | 287 | 31 | 4 | 29 | 35 | 34 | 10,034,042 | 13 |
| Activation – Unknown | 345 | 37 | 5 | 36 | 34 | 33 | 45,398,616 | 57 |
| Total | 940 | 100 | 14 | 100 | 104 | 100 | 79,175,774 | 100 |

## Alarm Assistance to Occupants

| Status | Fires | % of Fires | Deaths | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| Occupant evacuation unknown | 12 | 4 | 4 | 80 | 1 | 3 | 872,204 | 4 |
| Not applicable/ no occupants | 38 | 12 | 0 | 0 | 0 | 0 | 4,623,475 | 19 |
| Alarm assisted occupants to evacuate | 225 | 73 | 0 | 0 | 29 | 83 | 17,796,304 | 75 |
| Alarm did not assist occupants to evacuate | 33 | 11 | 1 | 20 | 5 | 14 | 451,133 | 2 |
| Total | 308 | 100 | 5 | 100 | 35 | 100 | 23,743,116 | 100 |



**FIRE**

In 2008, 52% of homes where fire occurred did not have smoke alarms installed. Lack of power source was the major reason the alarms failed to activate (25%).

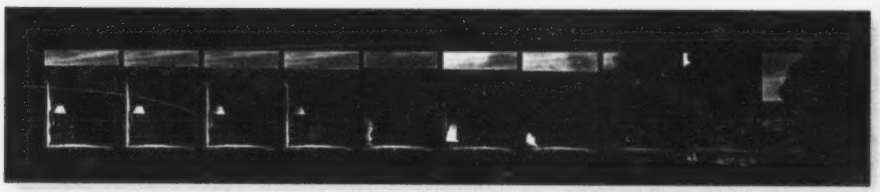
## Reasons – Alarms Did Not Assist

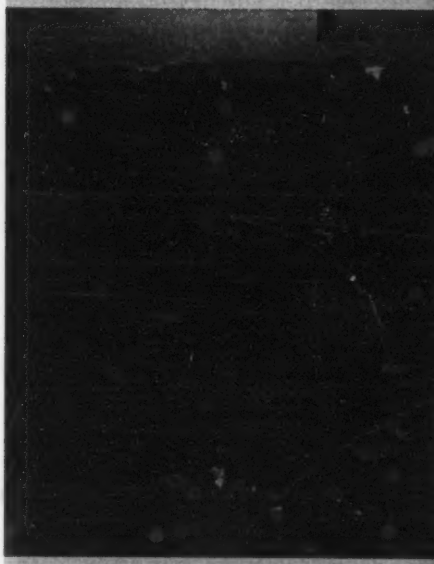
| Status | Fires | % of Fires | Deaths | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| Alarm inaudible | 1 | 3 | 0 | 0 | 0 | 0 | 1,001 | 0 |
| Physical/mental challenge | 2 | 6 | 0 | 0 | 1 | 20 | 43,000 | 10 |
| Unnecessary to evacuate | 28 | 85 | 0 | 0 | 4 | 80 | 351,132 | 78 |
| Under the influence of drugs/alcohol | 2 | 6 | 1 | 100 | 0 | 0 | 56,000 | 12 |
| Total | 33 | 100 | 1 | 100 | 5 | 100 | 451,133 | 100 |

## Reasons – Alarms Not Activated

| Status | Fires | % of Fires | Deaths | % of Deaths | Injuries | % of Injuries | $ Losses | % of $ Losses |
|---|---|---|---|---|---|---|---|---|
| Not enough smoke | 184 | 64 | 0 | 0 | 2 | 6 | 5,067,118 | 50 |
| No battery | 30 | 10 | 1 | 25 | 8 | 23 | 1,664,860 | 17 |
| Dead battery | 22 | 8 | 3 | 75 | 13 | 37 | 1,159,998 | 12 |
| AC not connected/ disabled | 19 | 7 | 0 | 0 | 9 | 26 | 639,585 | 6 |
| Mechanical failure | 19 | 7 | 0 | 0 | 2 | 6 | 935,390 | 9 |
| Unsuitable location* | 13 | 5 | 0 | 0 | 1 | 3 | 567,091 | 6 |
| Total | 287 | 100 | 4 | 100 | 35 | 100 | 10,034,042 | 100 |

*Since most of these fires originated in outside areas or structural areas of homes, an adequate amount of smoke did not reach inside the homes to trigger the smoke alarms.





F I R E

Of the 25 home fire fatalities, 11 (or 44%) occurred in homes with no smoke alarms installed, four (16%) occurred in homes where the smoke alarm did not activate and five (20%) where smoke alarm activation was unknown.

For a more detailed description of the following variables, please refer to the *Alberta Fire Statistics Reporting Manual* available on the Alberta Emergency Management Agency website at www.aema.alberta.ca/ps_fire_reporting.cfm

## Act or Omission

***The human element by which someone has done something (an act) or failed to do something (an omission). The act or omission indicates whether the fire was deliberate, neglectful or accidental.***

### Incendiary or Set fires
Includes arson, suspected incendiarism, riot, mischief or vandalism.

### Misuse of Source of Ignition
Includes disposal of smoker's material, thawing, inadequate control of an open fire, children playing with source of ignition, welding or cutting too close to combustible material or torch too close to combustible material.

### Misuse of Material Ignited
Includes fuel spilled accidentally, improper fuelling technique, cleaning or washing parts, improper container, overheated cooking oil, combustible placed too close to heat, and improper storage.

### Mechanical and Electrical Failure or Malfunction
Includes part failure, automatic or manual control failure, electrical short circuit and part worn out.

### Construction, Design or Installation Deficiency
Includes construction or design deficiency, installation too close to a combustible, other installation deficiency or over fusing.

### Misuse of Equipment
Overfuelling, includes any misuse of equipment or tools.

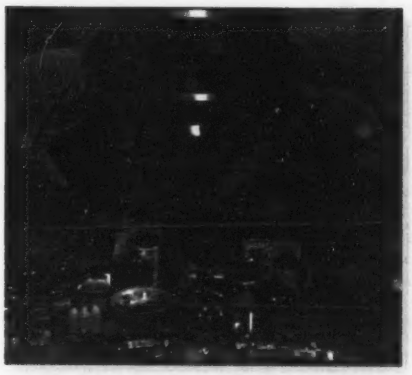
### Human Failing
Includes person asleep, temporary loss of judgement, physical disability, panic, influence of alcohol or drugs and ignorance of hazard.

## Area of Origin

***The area of a building or vehicle where the fire started.***

### Means of Egress
The area allowing an individual transit or a way of going out. Includes hallway, stairway, escalator, lobby and elevator.

### Assembly, Sales Area
Areas where groups of people gather. Includes theatre, arena, lounge, living room, sales or show room, library, museum and sports facility.



### Function Area
The area where a mode of action or activity is undertaken. Includes sleeping area, dining area, bar, washroom, office, laboratory, printing and photographic reproduction area, kitchen, laundry room, operating room, performance area and manufacturing area.

### Storage Area
The area inside a building where items are stored. Includes product storage area, closet, equipment area, records storage area, shipping and receiving area, trash and rubbish area, vehicle garage and agricultural product storage area.

### Service Facilities
Conveyance items such as dumbwaiters, service shafts, laundry and garbage chutes, heating and cooking ducts and chimneys or gas vents.

### Structural Area
Includes crawl space, balcony, ceiling and floor assembly, wall assembly, exterior wall or exterior roof and awning or canopy.

### Vehicle Area
Includes engine area, fuel area, control area, passenger area and cargo area.

### Outside Area
Includes open area such as lawn, field or park, court, patio, parking area, outdoor storage area and trash or rubbish area.

## Death

***A person killed accidentally as a direct result of a fire or a person who dies from a fire injury within one year following the date on which the injury was sustained.***

### Fire Death
Refers to a person who died as a direct result of a fire, either by smoke inhalation, burns or physical injury. Fire deaths also include persons killed as a result of a motor vehicle collision, an arson fire, an explosion, suicide, etc. where the Medical Examiner's Office has concluded the cause of death was due to fire.

## Fuel or Energy

***The fuel associated with the source of ignition. Includes coal, wood, fuel oil, gasoline, natural gas or other fuel gases, smoker's material, electricity, lightning or exposures.***

## Injuries

***A person accidentally injured as a direct result of a fire (a member of the fire department accidentally injured while in the process of fighting a fire or injured as a result of an accident while en route to or returning from the scene of an actual fire is considered a fire action injury).***

### Minor Injury
An injury that does not require hospitalization of over a 24-hour period or absence from work of not more than one full day.

### Light Injury
An injury that required admission to a hospital of over 24 hours up to 48 hours and/or absence from work for a period of two to fifteen days.

### Serious Injury
An injury that required admission to a hospital for a period of more than 48 hours and/or an absence from work for a period exceeding fifteen days.

## Material First Ignited

***The actual material that ignites and creates the fire condition.***

### Structural Components, Finish Materials
Includes roof covering, wall covering, floor covering, structural component, ceiling covering and insulation.

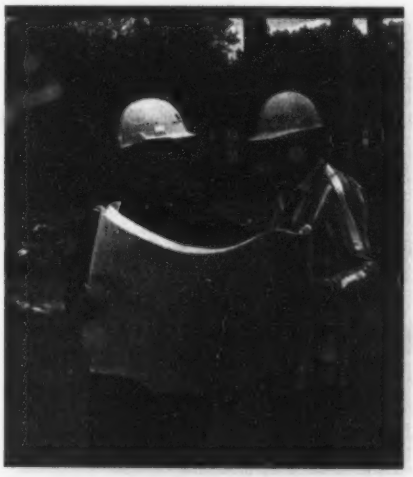
### Furniture, Furnishings
Includes furniture, ironing board, mattress, bedding, drapery and broom, mop or brush.

### Clothing, Textiles
Includes clothing, fabric, fur and tarpaulin.

### Wood, Paper Products
Includes wood, wood shavings, paper, cardboard and paper stock.

### Flammable Liquids
Includes gasoline, fuel oil, flammable liquids, paint, varnish, tar, asphalt, polish and wax.

### Flammable Gases
Includes natural gas, propane, anaesthetic gas, acetylene and hydrogen.



### Chemicals
Includes starch, flour, cellulose nitrate, plastic, oxidizing material, magnesium and alloys, titanium, natural or synthetic rubber and ammonium nitrate.

### Agricultural, Forestry Products
Includes fibres, grains, hay, trees, felled timber, grass, fertilizer and manure.

### Miscellaneous
Includes coal, garbage, trash, oily rags and artificial trees.

## Property Classification

***The principal use or occupancy of the building.***

### Assembly
Property for the gathering of persons for civic, political, travel, religious, social, educational or recreational purposes. Includes theatres, amusement or recreation places, schools, colleges, universities, churches, social or sport clubs, libraries and museums, eating establishments and passenger terminals.

### Institutional
Property for medical treatment, or care of persons suffering from illness, disease or infirmity, for the care of infants, convalescents or aged persons and for penal or corrective purposes. Includes prisons, jails, reformatories, homes for the aged, children's hospitals, hospitals and clinics.

### Residential
Property in which sleeping accommodation is provided for normal residential purposes. Includes one and two family dwellings, apartments, rooming or boarding houses, hotels, motels, dormitories and mobile homes.

### Business and Personal Service
Property for conducting business. Includes offices, personal services such as hairdressing and data processing or storage facilities.

### Mercantile
Property used for the display and sale of merchandise. Includes food and beverage sales, textile and clothing sales, furniture and appliance sales, books and specialty sales, recreational and hobby supply sales, repair shops, laundries, vehicle and boat sales and department or variety stores.

### Industrial Manufacturing Properties
Property where raw materials are transformed into new products and where the component parts of manufactured products are assembled. Includes chemical, petroleum, paint and plastic manufacturing; wood, furniture, and paper manufacturing; metal product and electrical equipment manufacturing; food processing; beverage, tobacco, soap and margarine manufacturing; textile manufacturing; footwear and wearing apparel manufacturing; and vehicle and related equipment manufacturing.

### Storage Properties
Property used primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals. Includes agricultural product storage; textile, fibre and clothing storage; processed food and beverage storage; flammable liquids, gas and petroleum products storage; wood, furniture, and paper products storage; chemical, paint and plastic storage; metal products, machinery, and electrical appliance storage and vehicle storage.

### Special Property & Transportation Equipment
Mainly outdoor property and transport equipment. Includes outdoor property, piers, buildings under construction or demolition, watercraft, rail transport vehicles, ground transport vehicles, aircraft and other special equipment.

### Miscellaneous
Includes laboratories, farm facilities, outbuildings, utilities, glass and pottery manufacturing, mining, communications and nucleonics.

## Source of Ignition

***The actual equipment, device or object which brings about ignition.***

### Cooking Equipment
Includes stove, range, food warming appliance, deep fat fryer, broiler and portable cooking unit.

### Heating Equipment
Includes central heating unit, service water heater, space heater, fireplace, chimney, flue pipe and steam or hot water pipe.

### Appliances and Equipment
Includes dryer, air conditioning equipment, pressing iron and incinerator.

Smoker's Material and "Open" Flames
Includes cigarettes, pipes, cigars and/or matches, lighters when used in conjunction with smoking. Includes matches and lighters not associated with smoker's material, candles, cutting torches, welding equipment and hot ashes.

### Exposure
Includes exposure from an attached or detached structure, lumber yard, open fire, forest, grass and brush.

### Miscellaneous
Includes internal combustion engine, heat treatment equipment, industrial oven, tar pot, fireworks, conveyors, commercial and industrial machinery and chemical reactions.

Digital images and photos submitted to enhance this report by fire and emergency services are gratefully acknowledged.

Report prepared by Mahendra Wijayasinghe, Ph.D., Manager, Research and Analysis, Alberta Emergency Management Agency. Phone: 780-415-0546 or email: mahendra.wijayasinghe@gov.ab.ca

Alberta Emergency Management Agency

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Edmonton, AB T5L 2W4
Phone: 780-422-9000
Fax: 780-422-1549

Email: aema@gov.ab.ca, Website: www.aema.alberta.ca

Alberta Response Readiness Centre (ARRC)
24 Hour: 1-866-618-2362.

Northwest Region

3201, Provincial Building
10320 - 99 Street
Grande Prairie, AB T8V 6J4
24 Hour: 1-866-618-2362

Bag 900, Box 24
9621 - 96 Avenue
Peace River, AB T8S 1T4
24 Hour: 1-866-618-2362

Northeast Region

14515 - 122 Avenue NW
Edmonton, AB T5L 2W4
24 Hour: 1-866-618-2362

407, Provincial Building
5025 - 49 Avenue
St. Paul, AB T0A 3A4
24 Hour: 1-866-618-2362

North Central Region
14515 - 122 Avenue NW
Edmonton, AB T5L 2W4
24 Hour: 1-866-618-2362

Central Region
Suite 207, Provincial Building
4920 - 51 Street
Red Deer, AB T4N 6K8
24 Hour: 1-866-618-2362

East Central Region

4910 - 52 Street
Camrose, AB T4V 4E8
24 Hour: 1-866-618-2362

Suite 207, Provincial Building
4920 - 51 Street
Red Deer, AB T4N 6K8
24 Hour: 1-866-618-2362

South Central Region
#250, 7015 Macleod Trail SW
Calgary, AB T2H 2K6
24 Hour: 1-866-618-2362

Southern Region
360 Provincial Building
200 - 5 Avenue S.
Lethbridge, AB T1J 4C7
24 Hour: 1-866-618-2362

First Nations North and South
407, Provincial Building
5025 - 49 Avenue
St. Paul, AB T0A 3A4
24 Hour: 1-866-618-2362


Interactive website on fire prevention and safety:
www.3minutedrill.alberta.ca


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